

ADDITIONAL NOTES ON THE GENUS *VITEX*. XXXVI

Harold N. Moldenke

*VITEX* Tourn.

Additional & emended bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 6 & 390--393. 1802; Blume, Flora 8: 107--109. 1825; Miq., Journ. Bot. Neerl. 1: 115. 1864; Powell in Seem., Journ. Bot. 6: 359. 1868; Horne, Year Fiji 269 & 275. 1881; Drake del Castillo, Illustr. Fl. Ins. Mar. Pacif. 260. 1892; Shirasawa, Bull. Coll. Agric. Tokyo 2: 270, pl. 18, fig. 17. 1895; C. K. Schneid., Dendrol. Winterstud. 188, 198, 201, & 267, fig. 191 a--g. 1903; F. W. Harvey, Garden 76: 24. 1912; Bakh. in White, Journ. Arnold Arb. 10: 264. 1929; W. Trelease, Wint. Bot., ed. 3, imp. 1, 323, 325, 334, & 335. 1931; Masamune, Trans. Nat. Hist. Soc. Formos. 22: 169, 220, & 224. 1932; Hosokawa, Trans. Nat. Hist. Soc. Formos. 23: 233. 1933; Masamune, Mem. Fac. Sci. Agr. Taihoku Univ. 11, Bot. 4: 388. 1934; Takenouchi, Journ. Nat. Hist. Fukuoka 2: 15. 1936; Hunt, South. Gard. 94. 1982; Mold., Phytologia 51: 388, 496, & 510 (1982) and 52: 19. 1982.

The Masamune (1932) reference in the bibliography (above) is sometimes cited as "121: 169, 220, & 224", but "121" is the issue number, not the volume number. This author classifies *Vitex* in what he calls the "Vitaceae". The index in the Hunt reference (1982, above) indicates that *Vitex* is mentioned on pages 91 & 93 of that work, but we fail to find it there.

*VITEX* *AGNUS-CASTUS* L.

Additional & emended bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 391. 1802; C. K. Schneid., Dendrol. Winterstud. 188 & 198, fig. 191 a--g. 1903; Brandis, Indian Trees, imp. 3, 504. 1911; F. W. Harvey, Garden 76: 24. 1912; Brandis, Indian Trees, imp. 5, 504. 1971; Mold., Phytologia 51: 246--290 & 330--355. 1982.

Additional citations: ISRAEL: J. Grant 143 (N).

*VITEX* *AGNUS-CASTUS* f. *ALBA* (West.) Rehd.

Additional synonymy: *Vitex agnus-castus* f. *albiflora* Mold., in herb.

Additional bibliography: Mold., Phytologia 51: 214. 1982.

*VITEX* *AGNUS-CASTUS* f. *LATIFOLIA* (Mill.) Rehd.

Additional bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 391. 1802; Mold., Phytologia 51: 214. 1982.

*VITEX* *ALTISSIMA* L. f.

Additional bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 391. 1802; Mold., Phytologia 51: 215 & 344. 1982.

*VITEX ALTISSIMA* f. juv. *ALATA* (Willd.) Mold.

Additional & emended bibliography: Brandis, *Indian Trees*, imp. 3, 504 (1911) and imp. 5, 504. 1971; Mold., *Phytologia* 51: 215. 1982.

*VITEX CANESCENS* Kurz

Additional & emended bibliography: Brandis, *Indian Trees*, imp. 3, 504 (1911) and imp. 5, 504. 1971; Mold., *Phytologia* 51: 217--218. 1982.

*VITEX CAPITATA* Vahl

Additional bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 393. 1802; Mold., *Phytologia* 51: 213. 1982.

*VITEX COOPERI* Standl.

Additional bibliography: Mold., *Phytologia* 48: 455. 1981.

Liesner and his associates refer to this plant as a tree, 8 m. tall, with bluish-purple corollas, and found it in anthesis in July at 500 m. altitude.

Additional citations: COSTA RICA: Alajuela: *Liesner, Almeda, & Wilbur* 3469 (E--2903445).

*VITEX CYMOSA* Bert.

Additional bibliography: Mold., *Phytologia* 51: 248--250 (1982) and 52: 19. 1982.

Recent collectors describe this plant as a tree, 15 m. tall, with a trunk to 25 cm. in diameter at breast height, and have found it growing in wet subtropical forests, at 226--650 m. altitude, in flower in October. The corollas on *Beck* 7135 are said to have been "blue" when fresh.

Additional citations: BOLIVIA: El Beni: *Meneces & Terceros* 377 (Ld). Santa Cruz: *S. G. Beck* 7135 (Ld).

*VITEX CYMOSA* f. *ALBIFLORA* Mold., *Phytologia* 52: 19. 1982.

Bibliography: Mold., *Phytologia* 52: 19. 1982.

Citations: BOLIVIA: Santa Cruz: *S. G. Beck* 7136 (Ld--type).

*VITEX DIVARICATA* Sw.

Additional bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 390. 1802; Brandis, *Indian Trees*, imp. 1, 504 (1906), imp. 3, 504 (1911), and imp. 5, 504. 1971; Mold., *Phytologia* 51: 250 & 257. 1982.

*VITEX DONIANA* Sweet

Additional bibliography: Mold., *Phytologia* 51: 251. 1982.

Additional citations: ZAIRE: *Donis* 3456 (N).

*VITEX DONIANA* var. *PARVIFOLIA* (Engl.) Mold.

Additional bibliography: Mold., *Phytologia* 51: 251. 1982.

Reekmans refers to this plant as a tree, 6 m. tall, and found it in (green) fruit in March.

Additional citations: BURUNDI: *Reekmans* 5829 (N).

*VITEX FLORIDULA* Duchass. & Walp.

Additional bibliography: Mold., *Phytologia* 51: 251. 1982.

Correa & Dressler describe this plant as a tree, 30 feet tall, with "blue-violet" corollas, and found it in full anthesis in March.

Additional citations: PANAMA: Panamá: *Correa & Dressler 829* (N).

*VITEX GAMOSEPALA* W. Griff.

Additional bibliography: Mold., *Phytologia* 51: 253, 260, & 276. 1982.

Geesink and his associates refer to this plant as a tree, 5 m. tall, with both "yellow" corollas and black fruit in June, and found it growing in evergreen forests on sandstone hills, at 50 m. altitude.

Additional citations: THAILAND: *Geesink, Hattink, & Charoenphol 7390* (Ac).

*VITEX GAUMERI* Greenm.

Additional bibliography: Mold., *Phytologia* 51: 254. 1982.

Nelson and his associates refer to this species as a tree, 20 m. tall, and found it in fruit in June, recording for it the vernacular name, "barrabás".

Additional citations: HONDURAS: Comayagua: *Nelson, Vargas, Alduin, & Pereira 3607* (Ld).

*VITEX GLABRATA* R. Br.

Additional & emended bibliography: Brandis, *Indian Trees*, imp. 3, 505 (1911) and imp. 5, 505. 1971; Mold., *Phytologia* 51: 254--255 & 267. 1982.

The Fox collection, cited below, was originally distributed as *A. parviflora* A. L. Juss. and later cited by me, erroneously, as *V. quinata* var. *puberula* (H. J. Lam) Mold.

The Yates 1609, distributed as *V. glabrata*, actually is *V. turczaninowii* f. *puberula* (H. J. Lam) Mold.

Additional & emended citations: THAILAND: *Congdon 591* (Ac). PHILIPPINE ISLANDS: Luzon: *Fox 99* [*Philip. Nat. Herb.* 4706] (Mi).

*VITEX GRANDIFOLIA* Gürke

Additional bibliography: Mold., *Phytologia* 48: 458 (1981) and 49: 464. 1981.

Additional citations: LIBERIA: *Blickenstaff 18* (Mi); *Daniel 331* (Mi). NIGERIA: *J. G. Smith 431* (Mi).

*VITEX GRISEA* var. *DEKINDTIANA* (Gürke) Pieper

Additional bibliography: Mold., *Phytologia* 45: 488. 1980; Mold., *Phytol. Mem.* 2: 234 & 590. 1980.

*VITEX GUERKEANA* var. *GOSSEWILERI* Pieper

Additional bibliography: Mold., *Phytologia* 45: 488. 1980; Mold., *Phytol. Mem.* 2: 234 & 590. 1980.

*VITEX GUIANENSIS* Mold.

Additional bibliography: Mold., *Phytologia* 45: 488. 1980; Mold., *Phytol. Mem.* 2: 123 & 590. 1980.

*VITEX HEPTAPHYLLA* A. L. Juss.

Additional bibliography: Mold., *Phytologia* 51: 250 & 256--257. 1982.

The Liogiers refer to this plant as a tree, 8--10 m. tall, with spreading branches, "blue" corollas, and yellow fruit, and encountered it in flower and fruit in May, growing on lateritic soil.

Additional citations: HTSPANIOLA: Dominican Republic: *Liogier & Liogier 26676* (N).

*VITEX KUYLENII* Standl.

Additional bibliography: Mold., *Phytologia* 51: 258 & 264. 1982.

Dwyer refers to this species as a tree, 6 m. tall, and found it with purple-black fruit in July.

Additional citations: BELIZE: *Dwyer 14843* (Ld).

*VITEX LEANDRII* Mold.

Additional bibliography: Mold., *Phytologia* 46: 12. 1980; Mold., *Phytol. Mem.* 2: 252 & 591. 1980.

*VITEX LEBRUNI* Mold.

Additional bibliography: Mold., *Phytologia* 46: 12. 1980; Mold., *Phytol. Mem.* 2: 221 & 591. 1980.

*VITEX LEHMBACHII* Gürke

Additional bibliography: Mold., *Phytologia* 46: 12 & 21. 1980; Mold., *Phytol. Mem.* 2: 215 & 591. 1980.

*VITEX LEUCOXYLON* L. f.

Additional & emended bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 392. 1802; Brandis, *Indian Trees*, imp. 3, 504 (1911) and imp. 5, 504. 1971; Mold., *Phytologia* 51: 259, 339, & 347. 1982.

The *Wirawan, Cooray, & Balakrishnan 914a* sheet in the University of Michigan herbarium, a number cited by me from other herbaria as typical *V. leucoxyton*, seems definitely to represent *f. zeylanica* (Mold.) Mold. On the other hand, the leaflets on the Michigan sheet of *Saldanha 13175* are definitely too large for *f. zeylanica*.

Additional & emended citations: INDIA: Karnataka: *Ramamoorthy & Gandhi H.F.P. 2764* (Mi); *Saldanha 13009* (Mi), *13175* (Mi), *16745* (Mi).

*VITEX LEUCOXYLON* f. *ZEYLANICA* (Mold.) Mold.

Additional bibliography: Mold., *Phytologia* 51: 259. 1982.

The *Saldanha 13175* specimen in the University of Michigan herbarium seems to be typical *V. leucoxyton* L. f., rather than the present form.

Additional & emended citations: SRI LANKA: *Fosberg, Mueller-Dombois, Wirawan, Cooray, & Balakrishnan 51081* (Mi); *Wirawan, Cooray,*

& Balakrishnan 914 (Mi), 914a in part (Mi).

*VITEX LIMONIFOLIA* Wall.

Additional & emended bibliography: Brandis, Indian Trees, imp. 3, 504 (1911) and imp. 5, 504. 1971; Mold., Phytologia 51: 259. 1982.

*VITEX LOKUNDJENSIS* Pieper

Synonymy: *Vitex lukundjensis* Pieper ex Mold., Phytologia 51: 260, sphalm. 1982.

Additional bibliography: Mold., Phytologia 51: 260. 1982.

*VITEX LOKUNDJENSIS* var. *KRUCKEI* Pieper

Additional synonymy: *Vitex lukundjensis* var. *kruckei* Pieper ex Mold., Phytologia 51: 260, sphalm. 1982.

Additional bibliography: Mold., Phytologia 51: 260. 1982.

*VITEX LUCENS* T. Kirk

Additional & emended bibliography: Hook., Icon. Pl. 5: pl. 419/420. 1842; Stafleu & Cowan, Taxon. Lit., ed. 2, 294--295. 1979; Mold., Phytologia 51: 260--261. 1982.

Emended illustrations: Hook., Icon. Pl. 5: pl. 419/420. 1842.

The Hooker (1842) plate is sometimes erroneously cited as "1519/1620" and dated "1844".

Orchard found this tree in full fruit in October.

Additional citations: NEW ZEALAND: North: Cooper & Nickerson 6230 (W--2947672); MacDaniels P.563 (It); Orchard 3540 (Ba--370074). MOUNTED ILLUSTRATIONS: Hook., Icon. Pl. 5: pl. 419/420 (Ba--380420).

*VITEX NEGUNDO* L.

Additional & emended bibliography: Fcur., Fl. Cochinch., ed. 1, 2: 390--392. 1790; Will. in L., Sp. Pl., ed. 4, 3 (2): 393. 1802; Miq., Journ. Bot. Néerl. 1: 115. 1861; Shirasawa, Bull. Coll. Agric. Tokyo 2: 270, pl. 10, fig. 17. 1895; Brandis, Indian Trees, imp. 3, 503--504. 1911; Bakh. in White, Journ. Arnold Arb. 10: 264. 1929; Hosokawa, Trans. Nat. Hist. Soc. Formos. 23: 233. 1933; Brandis, Indian Trees, imp. 5, 503--504. 1971; Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3514 & 3515. 1982; Mold., Phytologia 51: 247, 264--266, 276, 331, 337, 339, 343--345, 347, & 349--351. 1982.

Additional & emended illustrations: Shirasawa, Bull. Coll. Agric. Tokyo 2: pl. 10, fig. 17. 1895; Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3514. 1982.

Shirasawa (1895) describes the winter characteristics of this plant as "Knospen sind unter der Blattachsel verborgen, so dass man die Zahl der Blättchen nicht wahrnehmen kann, graubraun filzig behaart. Die einjährigen Zweige viereckig, graubraun, erade u. lang. Blattnarbe sichelförmig. Lent. klein, deutlich. Mark 4 kantig." He records the vernacular Japanese name, "ninjinboku".

The corollas are said to have been "blue" on *Lei 700*, "bluish" on *Taam 1728*, "violet" on *Keng 1632*, "purple" on *Chan 1084* and

*Wang* 32749, "white with purple spots inside" on *Chan* 1074, "purplish-white with deep purple" on *Chun & Tso* 43701, and "blue, white" on *Gressitt* 461.

Everett (1982) says that "Most vitexes thrive in a wide variety of soils so long as they are not excessively wet....All like warm, sunny locations. Although no regular pruning is necessary, some vitexes, including the chaste tree and *V. negundo* and their varieties, can be kept fairly low by severe pruning each spring just before new growth begins. The treatment consists of cutting back last year's branches to within an inch or two of their bases and completely eliminating enough of these to preclude overcrowding of the new shoots. Vitexes have long, stringy roots and therefore do not transplant readily. When they are moved it is important to retain as many roots as possible and to cut the tops back severely. In the north, spring is the best time to transplant. Propagation is easy by summer cuttings under mist or in a greenhouse or cold frame propagating bed, by layering, and by seed. The seed may be sown indoors in winter or in a cold frame in spring."

The *Wan & Chow* 79016, distributed as typical *V. negundo*, actually is var. *cannabifolia* (Sieb. & Zucc.) Hand.-Mazz.

Additional citations: SRI LANKA: *Comanor* 778 (Mi). CHINA: Fukien: *P'ei* 2753 (Mi). Kiangsu: *Keng* 1632 (Mi). Kwangtung: *Tsui* 617 (Mi). Szechuan: *Fang* 9277 (Mi). CHINESE COASTAL ISLANDS: Hainan: *Chun & Tso* 43701 (Mi); *Lei* 700 (Mi); *Wang* 32749 (Mi). HONG KONG: *Chan* 1074 (Mi), 1084 (Mi); *Taam* 1728 (Mi). TAIWAN: *Gressitt* 461 (Mi); *Tanaka & Shimada* 17878 (Mi).

*VITEX NEGUNDO* var. *CANNABIFOLIA* (Sieb. & Zucc.) Hand.-Mazz.

Additional bibliography: Mold., *Phytologia* 51: 265--266. 1982.

Additional citations: CHINA: Kwangsi: *Wan & Chow* 79016 (Ac).

*VITEX NEGUNDO* var. *HETEROPHYLLA* (Franch.) Rehd.

Additional bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 392. 1802; Everett, N. Y. Bot. Gard. *Illust. Encycl. Hort.* 10: 3514 & 3515. 1982;

For Everett's (1982) cultural notes for this plant, see under *V. negundo* (above).

*VITEX NEGUNDO* var. *INTERMEDIA* (P'ei) Mold.

Additional bibliography: Mold., *Phytologia* 51: 265 & 266. 1982.

The leaflets on *Lau* 20133 are almost all toothed. The corollas on *Chan* 1120 are said to have been "light-purple with darker dots on the lower lobe" when fresh.

Additional citations: CHINA: Kwangsi: *Chiao* 18774 (Mi).

Kwangtung: *Lau* 20133 (Mi); *Tsui* 453 (Mi). Szechuan: *Fang* 4629 (Mi). HONG KONG: *Chan* 1120 (Mi).

*VITEX ORINOCENSIS* var. *MULTIFLORA* (Miq.) Huber

Additional bibliography: Mold., *Phytologia* 51: 269--270 & 280. 1982.

Recent collectors describe this plant as a tree, 8--18 m. tall,



the trunk to 35 cm. in diameter at breast height, the filaments blue, and the anthers dark-blue or purple, the immature fruit green in November. The corollas are said to have been "lilac with yellow centers" on Daly & al, 1388 and "pétalas azul pálidas, labelo azul mais escuro com linhas brancas (guias para néctar) passando dentro da garganta de corola, tubo de corola lilás" on Nelson 734. They have found it growing in sandy soil, flowering and fruiting in November.

Additional citations: BRAZIL: Acre: B. Nelson 734 (N). Pará: Daly, Callejas, Silva, Taylor, Rosario, & Santos 1385 (Ld), 1388 (Ld).

*VITEX PARVIFLORA* A. L. Juss.

Additional bibliography: Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3515. 1982; Mold., Phytologia 51: 257, 261, & 270--271. 1982.

Chan refers to this plant as a tree, 8 m. tall, and found it in flower and fruit in July, the corollas "purplish-blue, hairy in the throat".

Additional citations: HONG KONG: Chan 1135 (Ml).

*VITEX PEDUNCULARIS* Wall.

Additional & emended bibliography: Brandis, Indian Trees, imp. 3, 505 (1911) and imp. 5, 505. 1971; Mold., Phytologia 51: 271. 1982.

Additional citations: CAMBODIA: Pierre 549 (Ml).

*VITEX PINNATA* L.

Additional synonymy: *Vitex glabrata* Ridl., in herb. [not *V. glabrata* Blume, 1956, not R. Br., 1810, nor F. Muell., 1895, nor sensu Kaneh., 1979].

Additional & emended bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 391 & 393. 1802; Brandis, Indian Trees, imp. 3, 504 (1911) and imp. 5, 504. 1971; Mold., Phytologia 51: 272--273. 1982.

The Shimizu & al. collection, cited below, exhibits no bracts at all in the inflorescence, but I assume that because of its advanced stage of growth they were there but have since fallen off.

Additional citations: THAILAND: Congdon 30 (Ac), 211 (Ac); Geesink, Hattink, & Charoenphol 7294 (Ac); Shimizu, Toyokuni, Koyama, Yahara, & Santisuk T.18006 (Ac).

*VITEX PSEUDOLEA* Rusby

Additional bibliography: Mold., Phytologia 51: 273. 1982.

The Vargas 17755, distributed as *V. pseudolea*, is not verbena-ceous.

*VITEX PYRAMIDATA* B. L. Robinson

Additional bibliography: Mold., Phytologia 51: 273--274. 1982.

Oliver and his associates describe this plant as a tree, 6 m. tall, with "blue" corollas and "fruit 2-seeded by abortion".

They encountered it on sandy rocky hillsides at 5300 feet altitude, in flower and fruit in July.

Additional citations: MEXICO: Jalisco: *Oliver, Verhoek-Williams, & Andreasen 667 (Ld)*.

*VITEX QUINATA* (Lour.) F. N. Williams

Additional & emended synonymy: *Cornutia quinata* Lour., Fl. Cochinch., ed. 1, 2: 2: 387. 1790. *Vitex rotundifolia* var. *heterophylla* (Roxb.) Mak., in herb.

Additional & emended bibliography: Lour., Fl. Cochinch., ed. 1, 2: 387. 1790; Brandis, Indian Trees, imp. 3, 504. 1911; Mak., Illust. Fl. Nipp. 186. 1940; Brandis, Indian Trees, imp. 5, 504. 1971; Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3515. 1982; Mold., Phytologia 51: 268, 274, & 282. 1982.

The alleged Makino trinomial, listed in the synonymy (above), apparently based on *V. heterophylla* Roxb., is obviously based on a misinterpretation of Makino's *V. rotundifolia* var. *heterophylla* published in his Illust. Fl. Nipp. (1940), which actually is a synonym of *V. trifolia* var. *subtrisecta* (Kuntze) Mold., although it has by some authors been applied to what we now call *V. trifolia* var. *simplicifolia* Cham. It has nothing to do with *V. quinata*.

The Curran collection, cited below, is sterile and exhibits some unifoliolate leaves, although most of its leaves are 4-foliolate. It is placed here tentatively because it does not seem to be *V. turczaninowii* Merr., as previously determined. The same is true of *Merrill 2196*, also cited below, with its small, short inflorescences and small, shiny leaves. The *Ching 5552*, *Herb. Canton Chr. Coll. 12613*, *Keng 1369*, and *Pételot 963*, cited below, were previously erroneously cited by me as var. *puberula* (H. J. Lam) Mold.

Additional & emended citations: CHINA: Kwangsi: *Ching 5552 (W--1248671)*. Kwangtung: *Peng, Tak, & Kin s.n.* [Herb. Canton Chr. Coll. 12613] (W--1248228). VIETNAM: Tonkin: *Pételot 963 (W--1759227)*. TAIWAN: *Keng 1369 (W--2035969)*. PHILIPPINE ISLS.: Luzon: *Curran, Philip. Forest Bur. 10338 (W--708781)*; (W--437144).

*VITEX RAPINI* f. *DENTATA* Mold.

Additional bibliography: Mold., Phytologia 49: 460. 1981.

Baumann describes this plant as an "Arbuste de 2 m, forme de jeunesse" and found it growing in the "Maquis serpentineux de montagne" at 900 m. altitude.

Additional citations: NEW CALEDONIA: *Baumann 8243 (W--2934930)*.

*VITEX SIAMICA* F. N. Will.

Additional bibliography: Mold., Phytologia 51: 275--276 & 344. 1982.

Congdon describes this plant as a tree with light-brown bark, the inner bark reddish-brown, the corolla 2-lipped, with yellow in the throat, the stamens 4, 2 long and 2 short, the anthers black, and the style as long as the stamens, bifid at the tip, and found the plant in flower in July, growing on limestone.



Additional citations: THAILAND: *Congdon 733* (Ac).

*VITEX SPRUCEI* Briq.

Additional bibliography: Sandw., *Kew Bull. Misc. Inf.* 1930: 157. 1930; Mold., *Phytologia* 51: 278. 1982.

*VITEX STAHELII* Mold.

Additional bibliography: Mold., *Phytologia* 51: 248, 278--280, & 289. 1982.

González refers to this plant as a tree, 12--15 m. tall, and found it in fruit in August, growing at 400 m. altitude. Material has been misidentified in herbaria as possibly representing something in the *Caryocaraceae* or the *Euphorbiaceae*.

Additional citations: VENEZUELA: Falcón: A. González 1094 (E--2735465).

*VITEX TRICHANTHA* J. G. Baker

Additional synonymy: *Vitex trichanthera* J. G. Baker ex Mold., *Phytologia* 51: 286, sphalm. 1982.

Additional bibliography: Mold., *Phytologia* 51: 286. 1982.

*VITEX TRIFLORA* Vahl

Additional bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 390. 1802; Mold., *Phytologia* 51: 259, 280, & 286--290. 1982.

*VITEX TRIFLORA* var. *KRAATZII* Huber

Additional bibliography: Mold., *Phytologia* 51: 330. 1982.

Recent collectors describe this plant as a "shrub or coarse herb to 1 m. tall" [Daly & al. 951], "procumbent vine" [Daly & al. 1107], small tree to 5 m. tall [Calderón & al. 2804], or even taller, and have found it growing on terra firme in rainforests and in the disturbed edges of campinarana, in flower in July and October, and in (green) fruit in October. The corolla is said to have been "lilac" on Calderón & al. 2804 and "purple & white with purple streaks in the interior" on Daly & al. 951.

Material has been misidentified and distributed in some herbaria as *V. trifolia* L.

Additional citations: BRAZIL: Para: Daly, Callejas, Silva, Taylor, Rosario, & Santos 951(Ld), 1107 (Ld). Rondonia: Calderón, Monteiro, & Guedes 2804 (Ld).

*VITEX TRIFOLIA* L.

Additional & emended bibliography: Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 392. 1802; Miq., *Journ. Bot. Néerl.* 1: 115. 1861; Powell in Seem., *Journ. Bot.* 6: 359. 1868; Horne, *Year Fiji* 269. 1881; Drake del Castillo, *Illust. Fl. Ins. Mar. Pacif.* 260. 1892; Shirasawa, *Bull. Coll. Agric. Tokyo* 2: 270. 1895; Brandis, *Indian Trees*, imp. 3, 504. 1911; Masamune, *Trans. Nat. Hist. Soc. Formos.* 22: 220 & 224. 1932; Hosokawa, *Trans. Nat. Hist. Soc. Formos.* 23: 233. 1933; Brandis, *Indian Trees*, imp. 5, 504. 1971; Hsiao, *Fl. Taiwan* 4: 434. 1978; Lord, *Trees Shrubs Austral. Gard.*, ed. 5, 232 & 321. 1978; Everett, *N. Y. Bot. Gard. Illust.*

Encycl. Hort. 10: 3514--3515. 1982; Mold., Phytologia 51: 330--355. 1982.

Additional illustrations: Hatusima & Yoshinaga, Bull. Fac. Agr. Kagosh. Univ. 2: 109, pl. 15, fig. 2. 1970.

Powell (1868) records the vernacular name, "namulega", for this plant in Samoa, while Hu (1981) lists "ching-tzu", "man-ching-tzu", and "seashore vitex" in China, where it is known as "Fructus Viticis" in materia medica.

Bolkhovskikh (1969) records the chromosome numbers as 26, 32, and 34. This discrepancy may possibly be due to the use of material representing not only the typical form of the species, but also some of the varieties or even of related species. The matter certainly needs further more careful cytologic study after the identity of the material used is carefully determined by a specialist in the group, with the preservation, in all cases, of herbarium vouchers!

It is perhaps worth noting that the Masamune (1932) reference in the bibliography (above) is sometimes cited as "121: 220 & 221", but the volume number is "22" -- "121" is merely the issue number.

The Daly & al. 951, distributed as *V. trifolia*, actually is *V. triflora* var. *kraatzii* Huber, while A. C. Smith 6610 is *V. trifolia* var. *subtrisecta* (Kuntze) Mold.

*VITEX TRIFOLIA* var. *BICOLOR* (Willd.) Mold.

Additional bibliography: Mold., Phytologia 51: 338--340 & 343--352. 1982.

Stone & Streimann refer to this plant as a "crooked little tree on beaches" on Manus island, with "lilac" corollas in June.

Additional citations: BISMARK ARCHIPELAGO: Manus: Stone & Streimann LAE.53720 (W--2917623).

*VITEX TRIFOLIA* var. *SIMPLICIFOLIA* Cham.

Additional & emended bibliography: Willd. in L., Sp. Pl., ed. 4, 3 (2): 390. 1802; Miq., Journ. Bot. Néerl. 1: 115. 1861; Drake del Castillo, Illust. Fl. Ins. Mar. Pacif. 260. 1892; Shirasawa, Bull. Coll. Agric. Tokyo 2: 270. 1895; C. K. Schneid., Dendrol. Winterstud. 188, 198, 201, & 267, fig. 191 a--g. 1903; Masamune, Trans. Nat. Hist. Soc. Formos. 22: 220 & 224. 1932; Hosokawa, Trans. Nat. Hist. Soc. Formos. 23: 233. 1933; Masamune, Mem. Fac. Sci. Agr. Taihoku Univ. 11, Bot. 4: 388. 1934; Takenouchi, Journ. Nat. Hist. Fukuoka 2: 15. 1936; Mak., Illust. Fl. Nipp. 186, fig. 558. 1940; Jinno, Jap. Journ. Genet. 31 (5): 147--150. 1956; Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3515. 1982; Mold., Phytologia 51: 339, 341, 344, & 352--355. 1982.

Additional & emended illustrations: Shirasawa, Jap. Laubh. Winterstud. 2: 270. 1895; Kanehira, Formos. Trees, ed. 2, 654, fig. 609. 1936; Mak., Illust. Fl. Nipp. 186, fig. 558. 1940; Liu, Illust. Nat. Introd. Lign. Pl. Taiwan 2: 1231. 1962; Pope, Man. Wayside Pl. 196, pl. 111 (in part). 1968; Hatusima & Yoshinaga, Bull. Fac. Agr. Kagosh. Univ. 2: 109, pl. 15, fig. 3. 1970;

Mold. in Menninger, Flow. Vines [335] & 339, ph. 285 & 286. 1970; Huang, Pollen Fl. Taiwan 163, fig. 15--17. 1972; M. R. Henderson, Malay. Wild Fls. Dicot. 1: 387, fig. 357. 1974.

Henderson (1974) describes this plant well: "A creeping shrub with long runners, rooting from the stems and flowering on short, upright, leafy shoots, leaves rather variable in size, but usually rather small and broad, widest at or above the middle, tip rounded or sometimes broadly pointed, base tapered, from less than 1/2 in. long and about 1/4 in. to 1 1/2 in. wide, upper surface pale green, lower surface ashy grey, leaf-stalk about 1/4 in. long, flowers in narrow inflorescences up to about 5 in. long from the ends of the upright shoots, calyx about 1/8 in. long, grey, with 5 very short teeth, corolla nearly 1/2 in. long, lilac blue, 2-lipped, stamens 4, fruit a round, black berry [actually a drupe] nearly 1/4 in. long, surrounded by the enlarged [fruiting-] calyx, which eventually splits along one side. On sandy seashores."

Backer & Bakhuizen (1965) say: "All leaves simple or consisting of 1 (whether or not deeply incised) leaflet. Stem creeping, copiously rooting from the nodes, emitting many erect, short, flowering branchlets; panicle terminal, narrow, 1--9 cm. long; cymes (lower often in upper leaf-axils) on a 1--4 cm long peduncle, 1--4-flowered; corolla bluish violet, inside (from the insertion of the stamens up to half the length of the lower lip) densely white-hairy; tube c. 3/4 cm; median segment of lower lip c. 1/2 cm; bases of filaments villous; drupe globose, dry, black, c. 1/2 cm diam.; pyrene corky. Leaves oval-elliptic-obovate, obtuse or subrotundate, entire or a few of them 2--3-partite, densely white-tomentose especially on the lower surface, 1 1/2 -- 4 1/2 cm; petiole 1 1/2 -- 3 1/2 cm. 0.06--0.30 (height; length 1--2 m)." He states that in Java it blooms throughout the year.

Shirasawa (1895) describes its winter characters as "Knospen klein, etwas entfernt oberhalb der Blattnarbe stehend, grau behaart. Die jüngeren Theile der Zweige dicht behaart wie mit Sammet bekleidet, graubraun, 4 bis 5 kantig. Mark weit, eckig. Kriechender Strauch nicht aufrecht stehend."

Miquel (1861) found it growing along roadsides in Fukien, "avec des fleurs bleues", along with *V. negundo* L. Van Steenis (1957), after a summation of the history of this taxon in taxonomic botany (as quoted by me in *Phytologia* 17: 115. 1968), continues as follows: "The conclusion in my opinion is therefore that it is a clearcut ecological (littoral) race, exclusive of the *V. trifolia* population. It should therefore be assigned subspecific rank which is accordingly proposed here. I have chosen a new name in the subspecific rank as the epithet *ovata* is misleading and the varietal epithets do not refer to its peculiar habitat. The technical description runs: rami prostrati, radicantes. Folia simplicia, obovata, rotundata. Type: *Bloembergen 3894* (L)." He gives its distribution as determined by specimens in the Leiden herbarium as "Japan: Nagasaki, Yokohama. China: Hongkong. Malaysia: Malay Peninsula: Kuala Kemaman, K. Pahang, K. Trengganu, Pahang Tua, Corner l.c.; Banka; W. Borneo: Dunselman l.c.; S. Java;

Patjitan; Madura Isl.: Sergang; Salayer Isl.; Sila Isl.; Mangoli; Lesser Sunda Isl.: Savu, Kisar, Timor; S. New Guinea: Merauke; Philippines: Luzon (Camarines Norte pr. Daet, Zambales pr. Subig, Batangas pr. Bauang), Mindoro, Panay (Antique), Sibuyan (Capiz Pr. Magellanes); Pacific: Bonin Isl. (Rurutu, pr. Murai), Hawaii (Oahu)."

Recent collectors describe the plant as a prostrate, decumbent, procumbent, creeping, or sprawling to ascending or even erect shrub, rarely scandent ["tangled prostrate vine"; "aromatic vine lying flat on the shore"], 0.5--2 m. tall, densely gray-white puberulent throughout, very aromatic; stems issuing from a root-stock, woody, to 2 cm. in diameter, rooting at the nodes, sometimes forming large woody mats; branches tetragonal, elongate, the ultimate flowering ones and the twigs ascending to erect; leaves grayish or gray-green to blue-green, aromatic, often covered by salt spray, the blades herbaceous, broadly ovate to broadly elliptic, succulent, 2--5 cm. long, 1.5--3 cm. wide, apically obtuse or rounded, marginally entire, basally abruptly acute, green or deep-green and thinly puberulent above, densely whitish- or grayish-puberulent or "frosted-white" beneath; panicle terminal, 4--7 cm. long, dense-flowered, with very short branches; flowers very pretty and attractive, opening late in the afternoon; corolla about 13 mm. long, the tube 8 mm. long, externally covered by white hairs, the face 15 mm. in diameter from lower to upper lip, the lower lip very much the larger; stamens 4; anthers sagittate, purple; pollen white; style 15 mm. long; fruit small, globose, 5--7 mm. wide, basally enclosed by the persistent fruiting-calyx, greenish-white to black or brown.

The corollas are said to have been "blue" on Hallier 4230d, Liang 64027, Maconochie 525, Sinclair 7526, Sivaraman 485 & 485a, Stoddart 4815, and Webster & al. 13843, "light-blue" on Hallier 4230a and Koyama 7311, "lilac-blue" (Henderson, 1974), "lavender-blue" on Hyland K.470, "blue-violet" on Fosberg 37605, "bluish-purple" on Fosberg 53663 and Hatheway & Caindec 139, "bluish-purple with a white patch at the center of the lower lip" on Hu 12286, "pale-lilac" on Chippendale 8159, "lilac" on Blake 22530 and Stoddart 4189, "light-violet or bluish-lavender" on Fosberg 36971, "lavender-purple" on Fosberg 27125, "purplish" on Herbst & Spence 5733, "light-purple" on Hu 5894 and Koyama 7043, "purple" on Beauchamp 932, Cowan 1060, Hiroe 14502, Perry 1223, Soepadmo KLU.9116, and Stoddart 5074, "lavender" on Hu 8635 and Specht 677, "violet" on Dress 1518 and Fosberg 38583, "dark-blue within and light-coerulean blue outside" on Hallier 4230, "the tube gray-blue outside, limb and inside of tube lavender-blue" on Biegel 3949, and "lower lip rich-violet with two short white vertical stripes at the throat, the other petals violet" on Iltis H.301.

Collectors have found the plant growing along shores in sand and sun, on sandy seashores and dunes, in strand areas, on sand cays, on the seaward parts of dunes, on sand-dune "foreshores", on sand in grass cover, in stabilized sand areas behind dunes, on sandy flats among grass with no shrubs present, on concrete dams,

and along rocky roadsides, from sealevel to 10 m. altitude, in flower from March to October and December, in fruit in January, July, October, and November.

Suauki & Nakanishi (1971) report finding the plant on stable sandy beaches with *Calystegia soldanella*, *Ixeris repens*, and *Carex kokomugi*. Ohwi (1965) reports it from "sandy places by the sea" on Honshu, Shikoku, Kyushu, Korea, Taiwan, the Bonin Islands, and the Ryukyu Islands to southern Asia, the Pacific Islands, and Australia.

Fosberg reports it "occasional on limestone rocks in low beach scrub", "common at edge of littoral scrub", "in sand near top of beach", and "common in edges of beach scrub on sand ridges back of beaches". Koyama refers to it as "Forming thickets with other shrubs along rivers" and as "quite common on sand dunes. forming long pure stands".

Beauchamp encountered it "in sand at upper edge of beach". It often grows among *Ipomoea pes-caprae*. On the island of Oahu the Degeners describe it as "pressing toward the ocean and being repulsed by winter storm waves", while Stone found it "on rocky slopes and sand on rocky shores with tidepools, *Acetabularia* in the pools.

Soepadmo refers to it as inhabiting "sandy soil of dry open lands" in Malaya. Stoddard describes it as a "common woody herb", "prostrate creeper", "common in tern colonies on bare ground of sand cays", and "occasional on seaward beach crests" in the Great Barrier Reef, but "uncommon" on Fife Island.

Hatheway & Caindec describe it as "sometimes erect, sometimes decumbent, 1--3 feet tall, dominant in lea of large dunes" on Oahu.

Common and vernacular names recently reported include "agubarao", "agubarau", "beach vitex", "ching-taŭ", "creeping vitex", "daldalaki", "danglá-ti-baybai", "dunglá", "hai-po'-kiu", "hamago", "hamagō" [=beach creeper], "hama-sikimi", "hogagii", "hogi", "king-tsse", "kolokolo-kahakai", "kon'ti sorn talay", "lagundi-dágat", "lagunding dagat" [lagundi = *V. trifolia*, dagat = ocean], "lagunding-gapang", "manawanawa", "manawanewa", "man-ching", "man-ching-taŭ", "man-ching-tsú", "oval-leaved chaste-tree", "péh-po'-kiu", "pohinahina", "polinalina", "seashore vitex", "simple-leaf chaste-tree", "simple-leaf shrub chaste-tree", "Taiwan-hamagô", and "vitex que serpea".

Huang (1972) describes the pollen grains as prolate to prolate-spheroidal, 27--40 x 19--33  $\mu$ , based on Huang 4177, while Ikuse (1956) gives the dimensions as 27--29 x 30--32  $\mu$ .

Jinneo (1956) gives the chromosome number as 32, and in this Chuang & al. (1963) concur.

Sweet (1826, 1830) avers that the variety was introduced into cultivation in England in 1796 from China.

Merrill (1918) states that "This species is not uncommon on sandy beaches along the seashore, and is widely distributed in the Philippines."

[to be continued]